

REMARKS

Claims 9-28 are all the claims pending in the application. Claim 9 has been amended and new claims 25-28 have been amended. Claim 9 has been amended based on the paragraph bridging pages 6 and 7 of the specification. New claims 25-28 recite mold materials based on the third paragraph on page 5 of the specification.

Entry of the above amendments is respectfully requested.

I. Response to Rejection of Claims 9-11 under 35 U.S.C. § 103(a)

Claims 9 and 10 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kusumi (JP 02-038330) in view of Sharan (US 2002/0040885 A1).

In addition, claim 11 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kusumi and Sharan (US 2002/0040885 A1), and further in view of Bernhard et. al. (Applied Physics Letters 74(8), 1999, pg 1084-1086) and Neudeck (Encyclopedia of Materials: Science and Technology, 2001, pp. 8508- 8519).

The rejection is respectfully traversed.

The present invention according to independent claim 9 is directed to a method of regenerating a pressing mold having a film containing carbon on a molding surface by (1) removing the deteriorated film by etching with plasma gas of a gas containing hydrogen a base plate temperature from room temperature to 300 °C; and (2) forming a film containing carbon on the molding surface.

The Examiner cites Kusumi as disclosing a process of regenerating the carbon film on a glass forming mold which has been deteriorated by multiple pressing operations, and the Examiner admits that Kusumi fails to explicitly indicate that the plasma should contain

hydrogen. To make up for the deficiencies of Kusumi, the Examiner cites Sharan as teaching a process whereby carbon-containing material is plasma etched from a silicon containing substrate using a plasma that "predominantly comprises hydrogen as well as other reactive or inert gases, with argon being but one example." The Examiner finds it obvious for one of ordinary skill in the art, having Kusumi and Sharan, to substitute for the oxygen plasma a predominantly hydrogen plasma or a plasma of a gas containing hydrogen.

Applicants respectfully disagree.

It is respectfully submitted that one of ordinary skill in the art would not combine Kusumi and Sharan. Kusumi is directed to mold cleaning whereas Sharan is directed to plasma etching a semiconductor substrate. Therefore, one of ordinary skill in the art of press-mold cleaning would not look to Sharan to modify the press-mold cleaning process of Kusumi, and thus would not be motivated to combine Sharan and Kusumi to arrive at the claimed invention.

Even if there were some motivation to combine Kusumi and Sharan, the present invention still would not be achieved. In the present invention, during plasma etching, the base plate temperature is from room temperature to 300 °C, as recited in claim 9. In contrast, both Kusumi and Sharan disclose that carbon containing material is plasma etched from the substrate at a temperature of at least 400°C. Indeed, the temperatures in Sharan (at least 400° C) are far beyond the temperatures needed for the present invention of room temperature to 300° C in order to preserve selection ratio. Therefore, a combination of Kusumi and Sharan would not teach all of the elements of claim 9, as required to establish a *prima facie* case of obviousness.

For at least the above reasons, it is respectfully submitted that claims 9-11 are

patentable.

In view of the above, withdrawal of the rejection is respectfully requested.

II. Response to Rejection of Claims 12-15 under 35 U.S.C. § 103(a)

Claim 12-14 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kusumi In view of Drzal (US 6,551,407).

In addition, claim 15 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kusumi and Drzal (US 6,551,407), and further in view of King et. al. (Journal of the Electrochemical Society: 146(7) 2648-2651 (1999) and Neudeck (Encyclopedia of Materials: Science and Technology, 2001, pp. 8508-8519).

The rejection is respectfully traversed.

Independent claim 12 is directed to a method of regenerating a pressing mold having a molding surface, where a deteriorated film on the surface is treated with ozone, followed by the forming of a film containing carbon on the molding surface.

Again, the Examiner looks to Kusumi for a teaching of the basic mold regeneration step. The Examiner admits that Kusumi fails to explicitly indicate that the deteriorated film should be removed by a treatment with ozone. To make up for the deficiencies of Kusumi, the Examiner cites Drzal as teaching a method of treating substrates of molds to remove a mold releasing agent using continuous ultraviolet light and ozone, at col. 1, lines 18-20. The Examiner asserts that on the basis of this teaching of a UV ozone process that is rapid and economical (col. 2, lines 52-54), it would have been obvious to modify Kusumi by using ozone and making the process continuous.

Applicants respectfully disagree.

It is respectfully submitted that there is no teaching or suggestion as to why one of ordinary skill would apply an ozone cleansing step as taught in Drzal to a mold cleansing process as taught in Kusumi. Kusumi does not indicate any difficulty with its own process of using the plasma. Further, nothing in Drzal teaches or suggests that the ozone process would be useful to clean a mold having a deteriorated carbon film. Drzal is only concerned with removal of hydrocarbons. There is nothing that teaches or suggests that the thickness of the film or its properties would be similar in the two cases. Thus, there is no motivation for the combination of the two references.

Accordingly, a *prima facie* case of obviousness has not been established since there is no teaching or suggestion in Kusumi or Drzal that would motivate one of ordinary skill in the art to combine the references.

For at least the above reasons, it is respectfully submitted that claims 12-15 are patentable.

In view of the above, withdrawal of the rejection is respectfully requested.

III. Response to Rejection of Claims 16-18 and 23-24 under 35 U.S.C. § 103(a)

Claims 16-18 and 23-24 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kusumi and Sharan, and further in view of Hirota (US 6,560,994 B1).

This rejection is respectfully traversed.

Independent claim 16 is directed to a method of manufacturing an optical glass element with a pressing mold having a molding surface and comprising the steps of press molding, cooling and removing a material, and regenerating the pressing mold by removing a film containing carbon by etching with plasma of a gas containing hydrogen, and forming the film

containing carbon on the molding surface.

It is respectfully submitted that claim 16 is patentable for the same reasons as claim 12, discussed above. That is, there is no teaching or suggestion as to why one of ordinary skill would apply an ozone cleansing step as taught in Drzal to a mold cleansing process as taught in Kusumi.

In addition, claims 17-18 and 23-24 depend from claim 16, and thus, it is submitted that that these claims are patentable for at least the same reasons as claim 16.

In view of the above, withdrawal of the rejection is respectfully requested.

IV. Rejection of Claims 19-22 under 35 U.S.C. § 103(a)

Claims 19 through 22 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kusumi and Drzal, and further in view of Hirota (US 6,560,994 B1).

This rejection is respectfully traversed for at least the following reasons.

Independent claim 19 is directed to a method of manufacturing an optical glass element with a pressing mold having a molding surface and comprising the steps of press molding, cooling, removing a material, and regenerated by removing a film containing carbon by a treatment with ozone, and forming the film containing carbon on the molding surface.

It is respectfully submitted that claim 19 is patentable for the same reasons as claim 12, discussed above. That is, there is no teaching or suggestion as to why one of ordinary skill would apply an ozone cleansing step as taught in Drzal to a mold cleansing process as taught in Kusumi.

In addition, claims 20-22 depend from claim 19, and thus, it is submitted that that these claims are patentable for at least the same reasons as claim 19.

In view of the above, withdrawal of the rejection is respectfully requested.

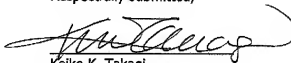
V. Conclusion

For the foregoing reasons, reconsideration and allowance of claims 1-28 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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